

in Japan: and we should possess materials sufficient to enable us to solve the question.

We know that a multitude of plants and animals occur both in Japan and in the north of China. The relation of the floras and faunas leads to the presumption that lands now separated were united at a more or less ancient period. Standing upon zoological facts, however, it is as yet difficult to adopt any such opinion with regard to the Japanese islands. Many types found in Japan have never been observed in eastern China. The great salamander of Siebold is an example of this; and it must be remarked that the allied species recently discovered only inhabits western China. In Japan alone the species of one of the most singular genera of carnivorous insects (the genus *Damaster*) have been met with; and it is worthy of notice that in each of the large islands of the archipelago a peculiar species of this genus has been taken. The period has not yet arrived for the complete appreciation of the totality of the relations which exist between the Japanese islands and the continent; one piece of knowledge is entirely wanting—that of the natural productions of Corea.—*Comptes Rendus*, July 10, 1871, tome lxxiii. p. 79.

On the Pedicellariæ and Ambulacra of Echinoneus.

By EDMOND PERRIER.

In my memoir on the pedicellariæ and ambulacra of the starfishes and sea-urchins, I was obliged to leave a considerable gap with respect to the irregular Echinida. In the collection of the museum most of the animals belonging to this group had lost the organs in question. An *Echinoneus* of undetermined origin and belonging to M. Deshayes has enabled me to diminish this gap a little.

In this animal, which is perfectly preserved in spirits, I have been able to ascertain the existence of two kinds of pedicellariæ: some of them, which are very small, occur on the buccal membrane, and are analogous in form to the tridactyle pedicellariæ of the true Echinidæ; whilst the others, which are much larger, occur on the surface of the test. The form of the latter is that of the tridactyle pedicellariæ of the *Spatangi*, except that their base is produced into a semicircular arc, analogous in form and position to that of the ophicephalous pedicellariæ of *Echinus* and allied genera.

These two kinds of pedicellariæ are furnished with a long pedicel, upon which they do not rest directly.

The solid pieces of the ambulacral tubes greatly resemble those of the regular Echinida. We find in them a rosette furnished with its frame, and spicules.

The rosette is, as usual, formed of six pieces; but it is more concave than in the regular Echinida. Moreover, instead of being formed by a reticulated plate of several layers united by transverse calcareous bars, each of the pieces of which the rosette is composed consists simply of a calcareous plate pierced with holes and toothed at the margins, but irregularly. The frame presents nothing peculiar.

The spicules are straight slender bacilli, bearing obtuse spines on two of their sides; these are tolerably long and of the same diameter as the bacillus itself. They are consequently very analogous in their form to those of certain species of *Cidaris*, and especially to the second of the forms represented in fig. 8 of the fifth plate of my memoir on the Echinida. This figure represents various forms of the spicules of a *Brissopsis* from Mexico. In *Echinoneus* there is merely a greater homogeneity of form.

Thus the *Echinonei*, which in form and in the greater part of their characters are intermediate between the regular Echinidæ and the Spatangoidæ, are equally intermediate in the constitution of their ambulacra.

It is to be wished that those naturalists who possess irregular Echinida in a good state of preservation would fill up the gaps which I have been obliged to leave in my general work, at least if they are convinced that the pedicellariæ and ambulacra can furnish good characters, as I believe I have shown to be the case.—*Annales des Sci. Nat.* 5^e sér. tome xiv. art. 5.

On the Reproduction of the Lophobranchs, and on the Filiation of certain Genera. By M. CANESTRINI.

It is known that the males of these fishes, or at least of the greater part of them, present cavities at the lower surface of the tail, in the form of fossettes, or of sacs, in which the ova undergo development, and in which the young remain for a certain time after exclusion. M. Canestrini has not been able, any more than the ichthyologists who preceded him, to actually see the manner in which the ova arrive in these receptacles; nevertheless he gives a sufficiently plausible hypothesis, based on certain anatomical arrangements. He supposes a sort of coition, in which, contrary to what is seen in other cases, the female products pass into the body of the male. The position of the sexual orifice of the female and that of the opening of the ovigerous sac would facilitate this. In fact the female sexual orifice looks downwards, and the orifice of the ovigerous sac is directed upwards, so that, if an individual of each sex be placed the one against the other, the female orifice will face the orifice of the ovigerous sac and be able to discharge its ova into the latter. It is probable that the prehensile tail of these animals also plays a part (at least in the case of the *Hippocampi*) by enabling the two individuals to hold each other closely united during this act, which must last a certain time or else be repeated again and again. The concourse of the sexes is evidently indispensable with the *Nerophes*, which have no pouch to receive the ova, but merely a series of fossettes at the surface of the belly, so shallow that no ovum could remain there if it were not deposited in its place and fixed by an adhesive substance.

M. Canestrini thinks that the male fecundates the ova after they have entered the ovigerous sac, the male sexual opening communicating with that cavity by means of a duct formed at the expense of